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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WALBERG, TERESA J

ART UNIT

PAPER NUMBER

3742

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/724,436

Applicant(s)

MARTIN ET AL.

Examiner

Teresa J. Walberg

Art Unit

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 12-14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/18/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the present drawings have hand written numerals. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Torigoe (5,918,664).

Torigoe discloses (see Fig. 3) a plate pair (2) having the claimed structure including a first plate (2) having a first opening (47a) through a first plate portion (47) thereof, a second plate (2) having a second opening (45) through a second plate portion (47) thereof, the second opening (45) being larger than the first opening (47a), and braze material (col. 3, line 46) securing the first plate portion to the second plate portion with the first and second openings (45 and 47a) in substantial alignment with each other.

With respect to claim 2, a perimeter of the first opening (47a) does not overlap with a perimeter of the second opening (45). See Fig. 3.

With respect to claim 5, at least one of the first and second openings is oval.

See Fig. 6.

With respect to claim 6, at least one of the first and second openings is elliptical.

See Fig. 6.

4. Claims 1-4 and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishishita et al (6,227,290).

Nishishita et al disclose (see Fig. 1) a plate pair (6) having the claimed structure including a first plate (Fig. 3C) having a first opening (19) through a first plate portion (7) thereof, a second plate (Fig. 3A) having a second opening (17) through a second plate portion (7) thereof, the second opening (17) being larger than the first opening (19), and braze material (col. 6, line 36) securing the first plate portion to the second plate portion with the first and second openings (17 and 19) in substantial alignment with each other. See col. 7, line 28 to col. 8, line 12.

With respect to claim 2, a perimeter of the first opening (19) does not overlap with a perimeter of the second opening (17). See Figs. 3A and 3C.

With respect to claim 3, at least the first opening is circular. See Fig. 3C.

With respect to claim 4, an opening formed by the aligned first and second openings has an effective diameter equal to that of the first opening. See Figs. 3A and 3C.

With respect to claim 9, the first and second opening may have a different shape. See Figs. 6A-6D.

With respect to claim 10, at least one of the first and second openings may be multi-sided. See Fig. 6E.

With respect to claim 11, the first and second openings may be non-concentric. See Fig. 5C.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishishita et al (6,227,290).

Nishishita et al disclose the use of openings that are approximately triangular (Fig. 6E) or approximately rectangular (the center opening in Fig. 6C), but having curved edges. It would have been obvious to make the openings exactly triangular or rectangular to more easily make the openings.

6. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishishita et al (6,227,290) or Torigoe (5,918,664) in view of Inoue et al (5,979,542).

Nishishita et al and Torigoe (see paragraphs 2 and 3 above) each disclose a method of forming a plate pair including providing a first plate having a first opening through a substantially planar portion thereof, providing a second plate having a second opening through a substantially planar portion thereof, the second opening being larger

than the first opening, at least one of the first and second plate being covered with a brazing material, and connecting the plates by brazing so that the first plate and the second plate are abutting with the first and second openings substantially in alignment with each other.

Nishishita et al and Torigoe do not disclose the brazing being performed by an oven.

Inoue et al teach that brazing of plate type heat exchangers is conventionally performed by use of an oven. See col. 1, lines 35-36.

It would have been obvious in view of Inoue et al to use an oven to braze the plate type heat exchanger of Nishishita et al or Torigoe to enable brazing the entire heat exchanger at one time.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishishita et al (6,227,290) or Torigoe (5,918,664) in view of Inoue et al (5,979,542) as applied to claims 15-19 above and further in view of Tavi et al (6,438,840).

Nishishita et al or Torigoe in view of Inoue et al disclose the claimed method with the exception of the plates being formed by stamping and punching.

Tavi et al discloses making heat exchanger plates by stamping and punching. See col. 4, lines 1-7.

It would have been obvious in view of Tavi et al to use stamping and punching to make the plates of Nishishita et al or Torigoe in view of Inoue et al to obtain plates having the desired shape.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Boquel et al (5,228,511) shows using holes having different sizes and shapes to compensate for expansion in joined plates, but does not show the plates being brazed or otherwise fixedly fastened together. See Fig. 5, elements 58 and 60.

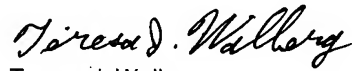
8. Claims 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if claims 12 and 13 were rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not show the claimed opening structure in a plate pair used with a fastener having a shaft passing through the openings (with respect to claim 12) or used in a peripheral edge flange (with respect to claim 13) to attach plate pairs together.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 703-308-1327. The examiner can normally be reached on M-F 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 703-305-5766. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Teresa J. Walberg
Primary Examiner
Art Unit 3742

tjw